THE Johns Hopkins
May 1951
SEE PAGE 1

"The bonds we bought for our country's defense bought and helped equip our farm!"

MR. AND MRS. CHARLEY L. WHATLEY OF CUTHBERT, GA. CAN TELL YOU—IT'S PRACTICAL AS WELL AS PATRIOTIC TO BUY BONDS FOR DEFENSE

Mr. Whatley inspects a beehive on his 202-acre farm. "I wouldn't own a farm, clear, today," he says, "if it weren't for U. S. Savings Bonds. We bought a new truck, refrigerator and electric range, too. I've discovered that bonds are the best way of saving for a working man."

Mr. Whatley says, "My wife and I bought our first bonds in 1943, through the Payroll Savings Plan at the Martha Mills plant of the B. F. Goodrich Co. in Thomaston. Our pay averaged $40 a week apiece and we put about a quarter of that amount into U. S. Savings Bonds."

"We'd saved $6,925 by 1950. $4,000 bought us our 202-acre farm and a 6-room house. Then we bought a new truck, a refrigerator and electric range. Now Mrs. Whatley has time for tending her flowers while I can enjoy my hobby of bee-keeping. We owe it all to *planned* saving."

"We're still holding bonds, too. We don't believe that anyone should cash his bonds unless he has to, so we're holding about $1,800 worth. With that cash reserve, and our farm clear, we can grow old with comfort and peace of mind. Everybody should buy U. S. Savings Bonds!"

The Whatleys' story can be your story, too!

You can make your dream come true, too—just as the Whatleys did. It's easy! Just start *now* with these three simple steps:

1. Make one big decision—to put saving *first*, before you even draw your pay.

2. Decide to save a regular amount *systematically*, week after week or month after month. Even small sums saved on a systematic basis, become a large sum in an amazingly short time!

3. Start saving automatically by signing up *today* in the Payroll Savings Plan where you work or the Bond-A-Month Plan where you bank. You may save as little as $1.25 a week or as much as $375 a month. If you can set aside just $7.50 weekly, in 10 years you'll have bonds and interest worth $4,329.02 cash!

You'll be providing security not only for yourself and your family but for the free way of life that's so important to us all. And in far less time than you think, you'll have turned your dreams into reality, just as the Whatleys did.

U. S. SAVINGS BONDS ARE DEFENSE BONDS —BUY THEM REGULARLY!

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THE Johns Hopkins MAGAZINE

VOLUME II May, 1951 NUMBER 8

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The Cover

The group of people on this month's cover are absorbed in the job of being corridor critics. Corridor criticism is a favorite pastime at the Hopkins Hospital these days, and nearly everyone there joins in. A picture story of what they are doing, and why, begins on Page 8.

Photo by Robert M. Mottar

In This Issue

THE IRREPRESSIBLE DR. WOOD 2

Hopkins' research professor of physics is recognized as one of science's true "greats." Here is his other side: the story of a scholar who has enjoyed combining fun with the seriousness.

CORRIDOR CRITICS 8

A new building is going up at the Johns Hopkins Hospital. Its construction is providing doctors, patients, and visitors with the opportunity to join in an activity which has universal appeal.

TROUBLED PEOPLE MEET ..... *Jerome D. Frank* 12

Doctors and research workers at Johns Hopkins' Phipps Clinic demonstrate group therapy, an important new approach to mental ills, in action. Actual cases are the basis for their story.

PASSING OF A CAMPUS 19

Today, one has to hunt hard to find the spot in downtown Baltimore where the University's unique contribution to American education began; where more than half its history has been made.

NEWS AT JOHNS HOPKINS 22

A digest of recent developments at the University and Hospital.

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Robert M. Mottar

DR. ROBERT WILLIAMS WOOD, present research professor of physics, has been for fifty years one of the most eminent—and surprising—members of the Johns Hopkins faculty.

The Irrepressible Dr. Wood

Hopkins' research professor of physics is recognized as one of science's true "greats." Here is his other side: the story of a scholar who has enjoyed combining fun with the seriousness

WHEN Robert W. Wood was eight years old he delivered a lecture on the anatomy of the jellyfish, illustrated with magic-lantern slides he had traced from Agassiz' drawings, to a not entirely admiring audience of neighborhood children and their mothers. His eighty-third birthday this month finds him in his Johns Hopkins laboratory experimenting with special diffraction gratings which, if he is successful, will still further increase the accuracy of spectrum research, in which he has been one of the world's leaders.

In the years between, his activities have given some severe jolts to his relatively sedate colleagues in physics. He once put the British Navy into the circus business when, at his suggestion, it trained seals to track and detect submarines. He presented spectrographic data to prove once and for all that the moon is not made of green cheese. For Florenz Ziegfeld he developed costumes which disappeared under certain lights, but the act was abandoned as too daring for its time. He turned detective long enough to solve several melodramatic bomb murders. And in between these distractions, he has made himself one of the foremost physicists of his generation.

As a serious physicist Dr. Wood is best known for his work with diffraction gratings. These instruments, which divide light into a spectrum of more than 100,000 colors, were perfected by Henry A. Rowland, first professor of physics at Hopkins and one of the founders of modern physical research. In the spring of 1901 both Rowland and his mechanic, Schneider, died suddenly. Their successors, unsure of the operation of the grating-making machine, damaged the main screw, and it was eight years until, under the ministrations of J. A. Anderson, the machine was turning out gratings again.

Only a few months after Rowland's death, Wood had returned to Hopkins as professor of experimental physics. He soon undertook extensive research involving the use of gratings, which can reveal the makeup of distant stars or of a single atom. Largely as a result of Wood's continuous pioneering, gratings are now essential tools of astronomers, industrialists, and the Federal Bureau of Investigation, and are rated the most valuable instrument in physics research.

WOOD discovered the resonance radiation of sodium and mercury vapors. His method of obtaining atomic hydrogen, coupled with his discoveries about the spontaneous incandescence of metal wires in atomic hydrogen at room temperature, led to Langmuir's invention of the atomic-hydrogen welding torch. He pioneered in the field of supersonics and, during World War I, developed the ultra-violet lamps now known as black-light lamps, used in fields as widely separated as medicine, mining, and commercial laundries.

The number of his contributions to science may be judged by the fact that he has written two books, with revised editions, and more than two hundred and sixty papers for scientific journals (said a German physicist, "That Wood —he produces like a rabbit."). And he has collected many of the important scientific medals from all over the world.

Wood is a brilliant experimentalist, rather than a theorist. So remarkable are his laboratory techniques that the term "a Wood experiment" has become a part of the language, meaning "any which is distinguished by unusual ingenuity and efficacy." It was Wood who, to clean a forty-two foot pipe for a spectroscope, inserted the loudly protesting family cat, closed the near end of the tube, and waited at his ease for cat, dust, and cobwebs to emerge from the other end. When lacking the proper varnish to test purple gold sequins from King Tutankhamen's tomb, he coated one with his wife's nail polish to disprove the current theory as to the coloring method, and subsequently discovered and duplicated the actual method himself. He sent a few sequins of his own making back to the curator of the Cairo museum, who promptly placed them in the showcase beside the ones from the tomb, with a card explaining their origin.

Wood has never been very much like other scientists. By his looks alone he is a standout in most gatherings of the

A WOOD SCRAPBOOK

↑ In Berlin, with Max Planck of quantum-theory fame, Wood discusses optics as Albert Einstein stands by

← With Arthur Train, Wood wrote "The Moon-Maker," and faked pictures of the moon to illustrate it. This one features a flying saucer, 1915 model.

august. He is an exceptionally tall and handsome man, whose admiration of the ladies has been amply returned. He is unusually amiable, and virtually never loses his temper. His Boston-bred, but California-raised, wife deems it a New England trait that, though he is attractive when he wants to be, he doesn't bother to be pleasant to people who don't interest him.

HE wants to do everything, and this quality, coupled with unconventional talents and an indefatigable sense of humor, has taken him on countless exploits. Several years before the Wright brothers started their experiments, Wood made a short flight in Otto Lilienthal's glider in Berlin. He was so delighted with the sensation that he determined to order a machine (a broad-winged biplane from which one hung by the arms) for himself; his enthusiasm was considerably damped, however, when Lilienthal crashed and was killed three days after Wood's flight.

To cover the cultural requisites, Wood learned two piano compositions, Schumann's "Grand Sonata" and the fast Rachmaninoff prelude, which for years he banged out at top speed and with mechanical over-perfection until his tortured family put an end to this career.

The physicist also turned out in 1907 a gay book of doggerel, *How to Tell the Birds from the Flowers*, which has been through three publishers and is coming out in a new edition. He sent the book to President Theodore Roosevelt, who wrote a cordial note asking to see more of his work. Wood complied by forwarding his *Physical Optics*, which the President later surmised was thrown out by a secretary.

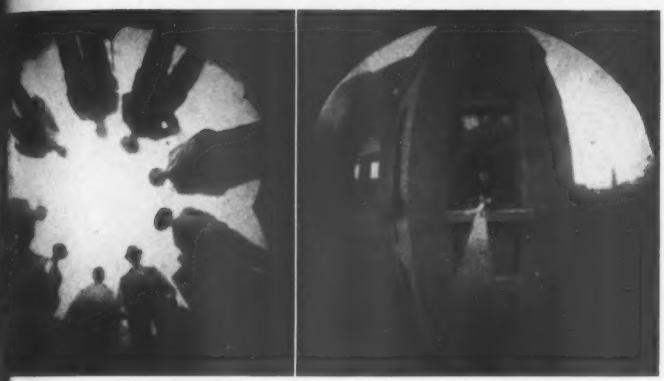
Beside his fellow scientists, who generally regard all publicity with a distinctly hostile eye, Wood looks as showy as a carnival pitchman. In 1897 he took to Wisconsin the first Stanley Steamer to be seen in the state and, in fact, the only one for two years. It was a sensation at a football game when, with the university president as passenger, Wood spun it around the outer track; but he was denounced by the old-fashioned as a "scorcher" who drove at "a dangerous and appalling speed."

WOOD takes advantage of every dramatic possibility. While visiting another man's laboratory, he once picked up a container of liquid air and filled his mouth with it, blowing it out as a cloud of white vapor. His colleagues watched electrified, believing that the air (which must be cooled to 280 degrees below zero to liquify) would freeze his mouth. Then, in a voice which at least hinted condescension, he explained that the heat of the mouth provided a vapor cushion which kept the liquid from touching the tissue, as drops of water will not touch a very hot pan.

When, in the Twenties, inventors of "death rays" were turning up by the dozen, he was called on by the government to debunk many of them. He grew quite expert at detecting hidden wires attached to the unhappy cows who were the customary victims of the rays. Wood finally issued a statement that he

His mercury telescope brought Wood → international attention. Some fans even wanted to use it to signal Mars.

Wood's fish-eye camera showed how diffraction makes the world look to a fish. At right, a self-portrait.



would stand in the path of any "death ray" produced, a challenge which very soon put an end to the inventions.

One of his particular delights has been the exposing of mediums. He has little interest in the psychic pretensions, but he has always had great curiosity as to how mediums manage to tip tables or play trumpets in the corner. To trap them he used ultra-violet lighting, fluorescence, and X-ray machines, and enjoyed their skillful performances as much as his own debunking. Unhappily this career did not last long, for it very shortly happened that no medium was ever feeling "psychic" when Wood was around.

ROBERT WILLIAMS WOOD was born in Concord, Mass., in 1868, of an old New England family. His father was a physician, who had sailed twice around the Horn before 1840. For ten years he was director of the Navy hospital in Honolulu and finally started the first successful sugar industry in Hawaii. The Woods are strongminded people; when Wood, Sr., was ninety he was driven to his bed not by sickness but simply by the infirmities of old age. After several days of this he rose in bed, pronounced in a clear voice "I want to give up the ghost," and lay back and died.

He was sixty-five when Robert, his only child, was born. It soon became apparent that Rob was a most unusual child. For one thing, he was inordinately fond of explosions. With his first batch of home-brewed fireworks he nearly wrecked the family raspberry patch, in which he had exploded his cache; with the second he blew out the windows and streetlamps nearby. Later, when he better understood the properties of explosives, he concocted a compound which would go off at a touch, and placed bits of it on his back fence to give prowling cats something to think about.

At Mrs. Walker's Select Day School, Wood was a memorable but hardly a star pupil. The main trouble was that Mrs. Walker's, like most "fitting schools" of the time, was dedicated to cultural studies, in which Wood had no interest at all. He spent his time with a superb plaything, the Sturtevant Blower Works owned by the Woods' neighbor.

At this factory, Wood found not just a hobby but a basis for his later career. He started inauspiciously by using a screwdriver instead of a chisel to make dumbbells on a power lathe; a workman corrected him before he killed himself. Soon he had learned enough to make a steel crossbow, which kicked like a shotgun and drove arrows with the power of a rifle bullet.

THIS enterprise became more than a schoolboy stunt on the day when Rob wondered why his hair stood on end every time he passed a large conveyor belt, which carried power from a flywheel to a blower. He had read just enough physics to recognize electricity and realize that he had a static electric machine at hand. He began to build Leyden jars and experiment with electricity, and from then on used the factory to turn out many kinds of test apparatus. (A decade later, when he was

← Wood made this picture with an infra-red filter two decades before infra-red photography came into widespread use.

In 1896, he took up gliding. His photograph of Otto Lilienthal is a classic one (right).

an undergraduate at Harvard, he came back to the works and built an apparatus with which he disproved an erosion theory propounded by his geology professor.)

He moved from Mrs. Walker's to Miss Weston's and then to William Nichols' Classical School in Boston without showing any appreciable improvement in his studies. Just before he was to take the entrance examinations for Harvard, he boned up on physics and botany, which were strictly forbidden by Mr. Nichols. He was admitted to Harvard not for his Latin and Greek, which he failed conclusively, but for his excellent showing in science.

HERE, finally, he was in his element. He spent most of his time on physics and chemistry. During a brief flyer in psychology, he became interested in William James' work on narcotics and once experimented by taking hashish himself. His account of the resulting hallucinations was published in James' *Psychology* and in the New York *Herald*.

Graduating from Harvard in 1891, Wood spent the next five years in postgraduate work at Hopkins, the University of Chicago, and the University of Berlin. These were wild days, for the young man applied much of his enlarging scientific knowledge to the perpetration of bigger and better practical jokes. He developed a ten-foot megaphone which threw a normal speaking voice a city block and enabled him to insult passing cops without the slightest chance of detection. And, with the aid of a pellet of sodium, he simulated "spitting" fire.

Meanwhile he courted Gertrude Ames, whom he had met while at Harvard. She lived in California, and he did his crosscountry wooing by wax phonograph cylinders. In 1892 they were married; their six-month honeymoon included a hunting trip through Yellowstone Park, where Wood embellished the Emerald Pool with a bright green chemical dye.

In 1897 he was made instructor of physics at the University of Wisconsin. His love of tricks made him an excellent lecturer, for he could work out illustrative experiments to liven his classes. He demonstrated the vortex atom theory, for example, by blowing from a box a smoke ring so big that it knocked over another box placed twenty feet away. (Using this trick at the University of Chicago once, he literally knocked the hat off the president's wife.)

THE freezing winter of 1899 gave Wood the chance to make his first really important contribution to applied science. During one particularly bad spell, virtually every water pipe in Madison was frozen. As Wood walked through the streets he saw teams of plumbers painstakingly building fires to melt the frozen ground, digging down to pipes, then building more fires to thaw the pipes. It occurred to Wood that if a current of electricity were passed through the pipes, the resistance would build up sufficient heat to thaw them. He submitted this project to the head of the university's electrical engineering department, who objected on the theory

The Quail. The Kale.

The California Quail is said
To have a tail upon his head,
While contrary-wise we style the Kale,
A cabbage head upon a tail.
It is not hard to tell the two.
The Quail commences with a queue.

Spoofing nature books for children, Wood wrote and illustrated 'How to Tell the Birds from the Flowers'--still being published.

Reprinted by permission of Dodd, Mead & Company from *How to Tell the Birds from the Flowers* by Robert Williams Wood, copyright 1917 by Dodd, Mead & Company.

The Cow Bird. The Cowslip.

Growing in mires, in gold attired,
The Cowslip has been much admired,
Altho' its proper name, we're told,
Is really the Marsh Marigold:
The Cow Bird picture, I suspect,
Is absolutely incorrect,
We make such errors now and then,
A sort of cow slip of the pen.

that the current would pass through the ground, leaving the pipes untouched. What he did not consider was that ice is a nonconductor, so that frozen soil was the very thing which would confine the current to the pipe.

With some still skeptical, they took the proposition directly to the local electric light company. In a few hours they had rigged a transformer from which wires conveyed current between a kitchen spigot and a sidewalk hydrant. The current was turned on, and very shortly the spigots were dripping, then spluttering, then sending out a torrent of rusty water. The newspapers picked up the story and within three weeks Wood's method was being used all over the country. It is still the standard cure today.

It is worth noting that Wood *happened* to pick State Senator W. F. Vilas' house for the experiment, and that the Senator was on a committee which chanced at that time to be considering a university appropriation. One week after the plumbing episode the university was granted $200,000.

While at Wisconsin, Wood started his inquiries into the properties and uses of diffraction gratings, the field in which he was to make his greatest name. Using gratings, he worked out a new process of color photography which brought him considerable reputation. As early as 1900 young Wood was invited to lecture before the Royal Society in London about his animated photographs of sound waves and drawings of wave evolutions—a process which was, incidentally, the direct forerunner of Mickey Mouse cartoons.

IN 1901 Wood returned to Hopkins, this time as professor of experimental physics. He was to hold this post, and act as department chairman on a rotating basis, until 1938, when he reached Hopkins' compulsory retirement age; he then "retired" to research professor of physics, without any perceptible diminution in energy or study.

Upon his arrival at Hopkins Wood plunged into research with the diffraction grating. Henry Rowland had perfected this tool and used it in his dramatic photographs of the solar spectrum. Wood greatly expanded Rowland's work and by his own investigations demonstrated the grating's extraordinary usefulness. He early used it in spectrographic studies on physical optics. Years later Sir William Bragg, in presenting the Rumford Medal to Wood, said "There is hardly a branch of the subject [of physical optics] which he has not enriched by the touch of his genius. . . . [His] discoveries opened up rich fields of research and were of the greatest value to later workers in laying the foundations of the theory of atomic and molecular spectra."

Wood was the first man to see the possibilities of ultra-violet and infra-red light. In 1909, two decades before infra-red photography came into wide use, he developed an infra-red filter which took pictures equally well in daylight or in complete darkness. His first photographic subject was, of course, a cemetery, because its ghostliness could be about doubled by the effects of infra-

Continued on Page 31

Among "corridor critics" at Johns Hopkins...

...a former boxing champion

...an outpatient

. . .a noted surgeon

. . .two Hopkins employees

. . .a visitor

. . .a nurse

. . .a violinist

The Corridor Critics Meet

Every weekday recently, crowds of passers-by—some of them studious, some amused, some puzzled, some just idly curious—have been gathering in small knots in one of the corridors at the Johns Hopkins Hospital. A few of them, including Ex-Prizefighter Jack Dempsey, Violinist Rubinoff, Surgeon Alfred Blalock, and several others whose names we failed to catch, appear above, as they paused in the hall one morning several weeks ago.

The object of their attention is a thing of universal appeal: a new building going up. The Hospital, having demolished an outmoded building, is erecting a modern one in its place. For the benefit of its visitors, its patients, and its staff, the Hospital has thoughtfully provided free membership in an organization it calls its Corridor Critics Club, whose facilities consist of a newsy bulletin board with construction reports and floor plans—and a well-placed window from which members can catch a wonderful view (*see next page*) of construction men at work.

Photographs by Robert M. Mottar

This is the corridor critics' bulletin board

AS construction progresses on the Johns Hopkins Hospital's new building, the bulletins posted for the information of corridor critics keep pace.

"Construction engineers," one recent bulletin began, "have recognized for years that no building larger than a telephone booth can be efficiently and soundly constructed without the full cooperation of sidewalk superintendents, corridor critics, kibitzers, and others who want to get into the act. With that fact in mind, this board has been installed to keep all and sundry informed as to construction progress and just what that man, who doesn't seem to be doing anything, *is* doing.

"To begin with, the plans call for the erection of a reinforced concrete-and-steel building of thirteen stories, with basement and sub-basement. The new building will contain enlarged accident-room quarters with ambulance ramp and entrance, various outpatient clinics, clinical and research laboratories, animal quarters, and additions to the general operating rooms. To date, excavation has been completed to the level of the footings of adjacent buildings and has been halted so that steel-sheet piling can be driven to protect the footings from shifting. This will take about three weeks. Excavation will then be resumed until a depth of five feet below the level of the present sub-basement is reached...

"But in answer to that question: *We* don't know what that man is doing either."

Medical history was made on the new building's site

The modern hospital structure now going up at Johns Hopkins will stand on a spot rich in medical history: the location of the old Surgical Building, in whose early days (1904) the above photograph was made. In this surgical amphitheatre—wearing the rubber gloves introduced at Hopkins but not yet wearing masks—are some of medicine's "greats," of whom many were then virtually unknown: Dr. Joseph C. Bloodgood, later known widely as a surgical pathologist and cancer fighter; Dr. William S. Halsted, professor of surgery and surgeon-in-chief; Dr. Hugh Young, later to become known as a great urologist and head of the Brady Institute; Nurse Helen H. Crawford; the eminent brain surgeon, Dr. Harvey Cushing; Dr. J. M. T. Finney, later to become acting head of Hopkins' department of surgery and surgeon-in-chief; and Dr. James F. Mitchell, now the retired clinical professor of surgery at George Washington University.

TROUBLED PEOPLE MEET

Doctors and research workers at Johns Hopkins' Phipps Clinic demonstrate how group therapy, an important new approach to mental illness, works

By JEROME D. FRANK
and members of the Phipps Clinic staff

WHEN we think of psychiatric treatment, we usually think of a doctor treating a patient alone in his office. But in recent years we have learned that certain types of patients can be successfully treated in groups. The demonstrations on the following pages are designed to show one way in which this is done with patients with emotional problems: people with disorders that are usually diagnosed as psychoneuroses.

Many psychoneuroses show themselves by some form of bodily suffering, such as headache, spells of dizziness or faintness, stomach trouble, palpitations of the heart; others show themselves by openly disturbed emotions, such as unexplained feelings of fear or sadness, or sudden attacks of panic.

Most neurotic complaints are manifestations of chronic emotional strain, which usually comes from persistent difficulties in getting along with other people. The trouble is that the patient does not know what these difficulties are. His real problems are hidden from him. All he is aware of are his symptoms.

The treatment of these patients consists of helping them to discover what their problems in getting along with others really are, and to find better ways of handling them. If they can do this, their physical symptoms may improve or even disappear.

A man came to me recently complaining of severe

IRENE: *tense*

JOE: *arrogant*

REGINA: *fluttery*

headaches. As we talked, it soon turned out that he had married a woman of whom his parents did not approve. Without his realizing it, his loyalties were divided between his wife and his parents, and he continually tried to please both sides. In his case, this did not work out at all. His wife resented his excessive attachment to his parents; and they, feeling their hold over him, continued attacking his wife. The constant emotional strain of being pulled in two directions was the basis for his headaches.

In a few group sessions, he came to see clearly what the real problem was, and to decide definitely that he would be a husband first and a son afterwards. When he began to show more independence from his parents, his wife became happier and their relationship improved. His parents were able to accept his change in attitude and to respect him for it. And as his home problems straightened out, his headaches disappeared. He had located his real trouble and was able to do something about it.

Most neurotic problems are much more deep-seated and long-standing than that—and therefore harder to treat. But the general principle of treatment is similar in all cases. We try to help the patient find out where his real problem lies, and to find a better way of solving it, thus relieving his emotional tension and neurotic symptoms.

Group treatment is based in part on the principle that patients can *help each other* to do this.

There are many different ways of treating patients in groups. Our groups consist of five to seven people of both sexes who meet once a week. We try to create an informal atmosphere in which patients can discuss freely their feelings and personal problems. The doctor

DR. FRANK

deliberately withholds his opinions; it is much better for the patients to arrive at their own solutions.

On the pages that follow are scenes from group sessions which show some of the ways—not all, by any means—in which group therapy can be helpful. Naturally an actual group session, with real patients, cannot be shown; group treatment, like all medical treatment, is confidential. But the dialogues—changed only to hide the identities of the people involved—are based on actual records; and the photographs—posed by members of our staff—portray as accurately as possible the visible emotions of the patients and our group-therapy procedures.

MICKEY: *griped*

TONY: *belligerent*

EDITH: *agitated*

JOE: *I'm sensitive about my slum background. I avoid people who remind me of it.*

TONY: *I think that's a crack at me. I come from the slums, and I haven't got a college education like you.*

TONY: *I've seen you with the big shots. You put on the dog and act like you were never poor. You're a snob.*

JOE: *You fellows don't do anything to improve yourselves, but you're jealous of anybody who does.*

JOE: *All my life I've wanted to be well-educated. Why does it irritate you so?*

TONY: *Just because you argue doesn't mean you can't like somebody. Often I like people* better *after a fight.*

JOE: *As far as I'm concerned, we're* still *on different levels.*

TONY: *There's* no *way to please you. You don't like it when I don't like you, and you don't like it when I do.*

Two group member

Six patients—Regina, Edith, Irene, Tony, Mickey, and Joe—are seated around the table at a group-therapy session. Dr. Frank is speaking:

DR. FRANK: You were talking about feelings of inferiority, Joe . . .

JOE: I suppose it's the general neurotic trend of my personality that makes me feel so inferior and inadequate. I come from the slums. I get embarrassed when people with the same background do things I wouldn't approve of. I'm so keenly sensitive about my background that I avoid people who remind me of it.

TONY: I think that's a crack at me. I come from the slums, too. And I haven't got a college education like you. And let me tell you what I think of you. . . . I've seen you when you were with the big shots. . . . You act like you were never poor, wearing that hundred-dollar suit and putting on the dog.

MICKEY: You know, Joe, Tony put his finger on it. That's what bothers me about you. You talk like a professor. When Tony talks, it may not be down a straight line, but it makes sense.

TONY: He's a snob.

DR. FRANK (*to Mickey*): Can you think why you might have those feelings about Joe?

MICKEY (*thoughtfully*): Well, it *could* be jealousy. He always seems to know so much, and uses so many big words.

JOE: The trouble with you fellows is that you don't do anything to improve your-

JOE: *No . . . I don't* want *your friendship. You're* all *a bunch of sick rabbits.*

...ave an intense argument.

One is startled by what he learns about himself

selves. And you're jealous of anybody who does.

TONY (*to Mickey*): I've always liked Joe; but when he talks about all those highbrow books, I feel like he's showing me up.

MICKEY: See what I mean about Tony? He's human. But Joe, here, he doesn't *need* any help. He's only here to help everyone else. The way he talks you'd think *he* was the doctor.

JOE: All my life I've wanted to be well-educated. I think that's the most important thing in the world. Why does it irritate you so? I can't understand it.

MICKEY: Maybe you'd be a lot better off if you'd study people for a change, instead of books.

IRENE: I think you're all being a little unfair. Even if Joe does act so superior, he really helps us.

EDITH: What good does it do us to argue this way all the time?

TONY: Just because you argue with someone doesn't mean you can't like him. Lots of times I like people *better* after a fight.

MICKEY: I don't think a fight's any way to make friends.

JOE: Neither do I. As far as I'm concerned, we're *still* on different levels.

TONY: There's just no way to please you, is there? You don't like it when I *don't* like you, and you don't like it when I *do*.

JOE: I don't want your friendship. As far as I'm concerned, you're *all* a bunch of sick rabbits.

MICKEY: You didn't think there was anything wrong with us when we called you a snob. You acted as though *that* hurt.

JOE: Well . . .

MICKEY (*excitedly*): Here's the strange thing about you, Joe. When people don't like you, you believe that. But when somebody *wants* to like you, that's when you say it isn't real. That's when you say it doesn't count.

JOE: Not in *this* group. How do *I* know you're sincere?

DR. FRANK: Mickey has something there, Joe. You take it seriously when they tell you they don't like you. Why do you believe that, but not their friendly feelings?

REGINA: You know, Joe, I don't know if this will help you . . . but I was thinking that if I were to say to you, "Joe, I love you very much," you would probably say, "How does Webster's Dictionary define love?"

(*Embarrassed laughter in the group.*)

JOE: I don't know what you mean.

TONY: I know. (*He turns to the others, particularly Regina.*) It's like when Joe and I worked in the same office together. He was the only unmarried guy around. The girls really went for him; but just when they were beginning to like him, he'd say something or do something that would fix it. And that would be the end. . . . Like that dictionary kind of thing.

JOE: Do you really think that I don't *let* people like me? That's a pretty hard idea to swallow.

Joe mulls over this interchange while the group turns its attention to the problems of some of its other members (next page). *He seems rather shaken, as the conversation returns to him.*

DR. FRANK: We've never seen you upset like this, Joe.

JOE (*almost tearful*): What you fellows were talking about really got me. I've been thinking about all the girls I've known, and I can see now why I couldn't be nice to the ones who liked me. It's *always* worked that way; as soon as they seemed to fall for me, I got suspicious. As I saw it, it wasn't the "real me" they liked—whatever that is. It was this intellectual pose. I couldn't think much of any girl who would be fooled by that. (*Joe pauses.*) If I could only be more natural with people. . . . If I could only let them know how I really felt.

Joe seems to have realized that the others were right. His attitude of not caring whether people liked him or not was only a pose. He desperately wanted others to like him but could not admit it because he did not believe anyone could be fond of his real self. This discovery cracked his shell of aloof superiority, and he began to be able to express the feelings behind it. This may make it possible for him to be more natural with people and eventually to work out his problem with girls.

For many minutes after the interchange, Joe mulls over what the others have said about him. He seems rather shaken.

Edith thinks her daughter does not love her

DR. FRANK (*to Irene*): You feel your mother doesn't give you enough sympathy?

EDITH (*to Irene, challengingly*): You mean that you feel your mother isn't a *good* mother?

IRENE: I try to stay away from my mother because every time I see her we get into an argument, and then I get upset. But she keeps on calling me up to tell me how sick she is. She never calls me when she has something *good* to say. When she bakes a pie or when she has some turkey left over, she calls my sister . . . but if it's something unpleasant she picks on me. I don't see how she expects me to love her when she treats my sister better than she treats me.

TONY: Why don't you do what my cousin did . . . move to another part of town? Or you could move out of the city. She's feeling fine now.

EDITH: My daughter told me just the other day that now that she's married, she's not part of our family any more. But I feel that as long as I'm around she'll need my help. Maybe I wasn't good enough to her. . . . God knows I've *tried* to be a good mother. . . . I've washed and ironed and scrubbed for her.

IRENE: I just feel awful saying things like this about my mother; but she does treat my sister better than she treats me.

DR. FRANK: Does anyone have any ideas about why mothers sometimes prefer one child?

EDITH: Some children *need* more attention than others.

JOE: Maybe you prefer one of your children over the others.

EDITH (*quickly*): No I don't . . . no I *don't.*

TONY (*to Edith*): I think you resent any child that can stand on its own feet.

EDITH (*defensively*): That's not true. But I don't think children should get fresh to their parents. *Imagine* her saying she's not part of our family! She seems to think she doesn't need me any more. *No* child who loves her mother would say a thing like that.

IRENE (*trying to help matters*): I know *I* favor my baby. Maybe all mothers prefer the youngest, although I know it's wrong.

REGINA (*hostilely*): My minister gave a sermon last Sunday about loving your mother. But at the same time he told us that a mother has to provide a whole lot more than just food and shelter for her children.

This is the "trigger" point for Edith. She becomes agitated; she twists in her chair.

EDITH (*pale and tense*): I feel weak. I've got to leave. I can't stand any more of this talk about mothers. (*She rises from her chair and backs toward the door.*) I've got to leave.

IRENE (*rising quickly, going to Edith and putting her arms around her*): Please don't go, Edith. Come on . . . sit down again. I'd feel so guilty if you left, because I started all this.

EDITH (*finally sitting down, a little apart from the group, still gasping and tense but not as agitated*): I've got to get out of here.

EDITH: *Maybe I wasn't good enough to her . . . God knows I've* tried *to be a good mother . . . I've washed and ironed and scrubbed for her.*

EDITH: *I feel weak. I've got to leave. I can't stand more of this talk about mothers. I've got to leave.*

DR. FRANK (*gently, sympathetically*): Can you talk about what upset you?

EDITH (*agitated again*): All this talk about mothers. . . . It's too much for me. If they keep talking about mothers I've got to leave. (*She starts to rise.*)

DR. FRANK (*encouragingly*): It would be better if you stayed and faced it. This is a good chance to talk it out here and now. Did you think that they were talking about *you?*

EDITH: Well, they're always talking about mothers.

DR. FRANK: Why don't you pull your chair up closer to the table again?

DR. FRANK is Associate Professor of Psychiatry at Johns Hopkins. Dr. Eduard Ascher, Assistant Professor of Psychiatry; Joseph B. Margolin, Helen T. Nash, Anthony R. Stone, and Edith Varon, Instructors in Psychiatry; Dr. Albert J. Stunkard, Fellow in Psychiatry; Irene N. Margolin, research assistant; Regina Slaughter, case supervisor; and Elaine Michelson collaborated with Dr. Frank in preparing this demonstration.

Photographs by Robert M. Mottar

TONY: *I think you resent any child that can stand on its own feet.*

EDITH: *That's not true. But I don't think children should get fresh to their parents.* Imagine *her saying she's not part of our family! She seems to think she doesn't need me any more.* No *child who loves her mother would say a thing like that.*

REGINA: *My minister gave a sermon last Sunday about loving your mother. But at the same time he told us that a mother has to provide a whole lot more than just food and shelter for her children.*

IRENE: *Please don't go. Come on, sit down again. I'd feel so guilty if you left.*

EDITH: *All this talk about mothers . . . It's too much for me. If they keep talking about mothers I've got to leave.*

DR. FRANK: *It would be better if you stayed and faced it. This is a good chance to talk it out here and now. Did you think they were talking about* you?

EDITH: *Well, they're always talking about mothers.*

IRENE (*helping Edith closer to the table*): Come on . . . please stay. If you go, I'll feel so bad. *Please* stay.

Edith sits a little closer to the table and seems more comfortable again. She seems to have rejoined the group.

REGINA (*apologetically*): I'm sorry. I really wasn't thinking of *you* when I talked about the sermon my minister gave.

TONY: Maybe you were upset because we were talking about mothers not doing enough for their children.

EDITH: That's just it. Every time you find fault with mothers in this group, I think maybe my daughter feels that way about me, too, and it gets me all upset.

IRENE: Maybe my mother feels the same way. But she should know that even if I do get mad, I love her anyhow.

JOE: The thing that interests me is how very much Irene is *like* Edith's daughter.

EDITH: That made me feel better, Irene. You seemed so mad at mothers, and yet you were so nice to me when I got upset. The trouble with my daughter comes when I tell her that if she loved me, she'd show it more. That's when she talks of leaving the family and tells me to leave her alone. Maybe she does love me, only I make her mad with my nagging.

DR. FRANK (*to Edith*): I'm glad you were able to stick this out. (*He addresses the group.*) I see our time is almost up, but before we break up I would like to comment that perhaps you, Edith, have begun to see that your children may love you more than you realized. You, Irene, have helped Edith see that her daughter's desire to be independent doesn't mean that she no longer loves her. Let's continue this discussion next time we meet.

The group helps Mickey, who has a stomach ache

What's the use complaining?
All I know is that I get a stomach ache.

The group is talking animatedly, except for Mickey, who is preoccupied and sad looking.

EDITH: I wish I wouldn't have any more of those nervous spells. They're terrible. I had one on Sunday, and I know what caused it. My married boy came to visit us, and I put myself out to please him . . . cooked pork chops. He loves that. And do you know what he said when he left? Nothing at all; nothing. I guess he thinks it's coming to him . . . but it sure got my goat. My husband thinks I still try to boss him too much and expect too much from him. Maybe he's right, but I can't help it. When you think of the trouble I took to raise that boy. . . . It seems I get a nervous spell when I'm mad.

REGINA (*waiting for her turn to tell about her symptoms*): I feel so much better. But it seems I can't drive a car without getting upset. I guess I have no confidence in myself.

JOE: One can't blame you for being nervous driving a car, with all that traffic in the city and all the reckless drivers on the road.

REGINA: But it's not that. It's all caused by a lack of confidence. I had no trouble with driving before . . . until the sickness started. It seems that being in a crowd bothers me. I get to feeling faint. The doctor here probably thinks that I'm afraid I'll make a fool of myself. He's right; I've always feared that.

IRENE: I know just what you mean. I always think what will happen if I pass out. Maybe I'll do something I'd be ashamed of, like screaming or something. As long as somebody is with me, it doesn't bother me so much. I know it's foolish, but I can't help it.

TONY: Crowds never bother me . . . I like 'em. I feel worse when I'm alone. That's when I get those silly thoughts and scared feelings.

DR. FRANK: What thoughts are they?

TONY: They're silly. I don't think anybody will understand. But since I've been coming here they haven't bothered me so much. I guess knowing that other people have silly thoughts makes you feel better.

(*Mickey continues to be preoccupied. There is a brief lull in the conversation.*)

DR. FRANK: Mickey hasn't been saying much today.

(*Mickey remains silent as the whole group's attention is turned toward him.*)

JOE: Say something, Mickey.

MICKEY: What's the use? You ask him a question (*points at Dr. Frank*), but you never get an answer. What's the use complaining? All I know is that I get a stomach ache.

JOE: What do you think caused your stomach ache?

MICKEY: How should I know? Ask him . . . maybe he'll answer *you*. He never answers *my* questions.

REGINA: He never answers mine, either. That's why I've stopped asking him.

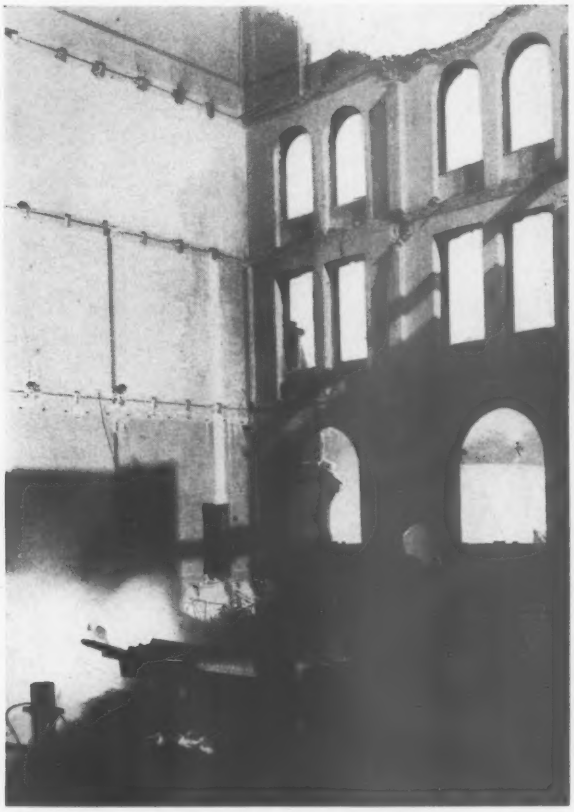
IRENE (*to Mickey*): Did your parents or something upset you?

MICKEY: No, my father's been good to me all week . . . no fights, no arguments. Anyway, I think my trouble is all physical and I'm going to go back to my own doctor who gives me pills.

Continued on Page 30

Come to think of it . . . my brother Bill never did anything for my father. I was always the good boy. He picked a lot of fights, but my father always blamed me—even though he was sure that Bill had started the trouble. I felt like telling my father off . . . but I was scared of him.

Passing Of A Campus



FIRE AND BLASTS swept buildings of Hopkins' first campus in 1919. McCoy Hall (above) was virtually a total loss.

Today, one has to hunt hard to find the spot in downtown Baltimore where Johns Hopkins' unique contribution to American education began

WHEN Johns Hopkins was a young university, its campus was centered around a street in downtown Baltimore which has now vanished from the city's postal directories: Little Ross Street. There, many of today's alumni earned their degrees; there, a revolutionary idea in American education, the Johns Hopkins concept of creative scholarship, flourished and grew.

In 1916, the forty-year-old University began moving to a new and spacious campus in the suburbs, and a chapter in Hopkins history began to draw to a close. In 1919 a fire, Baltimore's worst since its disastrous one of 1904, ended the chapter for good. The Hopkins buildings, by then only partially occupied by university activities, were swept by explosions and flame. Thirty engines pumped water on the blaze; thirteen firemen were injured fighting it. But by the morning of November 28, there was little left of Hopkins' first campus except the twisted mass of charred beams and fallen brick in the picture on this page. Today, the city has closed in; and a well-worn lamppost, which was there then and is still in use (*see photographs on the next page*), is virtually all that identifies where the Johns Hopkins University began.

The Johns Hopkins Magazine is indebted to Frederick K. Bell, B.A. '16, Ph.D. '20, for his photographs of the McCoy Hall fire which appear on these pages.

THE FIRST BUILDINGS at Johns Hopkins were along a narrow street that ran from Howard Street (foreground) to Eutaw. A parking lot occupies this site today.

TWENTY-FIVE YEARS after it was occupied in 1894, McCoy Hall, across street from buildings at left, was gutted

The Old Hopkins campus was almost a perfect example of the oft-quoted dictum that a university should put men before bricks as it builds. Its administration building, for instance (*upper left*), was two residences, made into offices by chopping holes through the wall. The buildings "were so inconspicuous," Dr. John C. French notes in his history of Hopkins, "that most Baltimoreans had only a vague idea of their location. Indeed, Kirby Flower Smith, arriving to do graduate work in Latin and told after inquiries that they were not far from the Academy of Music, walked several squares beyond them without seeing anything that in the least suggested an already internationally-known university."

MAIN CORRIDOR of McCoy Hall looked like this after 1919 blaze. Damage ran to $700,000.

by fire. By that time, most Hopkins activities had moved to new Homewood campus in northern Baltimore.

Blakeslee-Lane

THE SAME SPOT TODAY is occupied by modern building of the Young Men's Hebrew Association. Lamppost at the right is the same one which appears in center picture.

LOOKING NORTH FROM OLD CAMPUS, this picture, made just after the 1919 fire, shows location of Hopkins site. Collapsed roof (foreground) is on University Cage; Howard Street is at right.

NEWS at Johns Hopkins

A digest of developments at the University and Hospital in recent weeks

THE student body was at fever pitch. All day, a cannon boomed across the Homewood campus every hour; an orange-and-black-jerseyed player hung in effigy from a campus lamppost; a "Tiger Cemetery," with ten neat crosses, had been laid out in front of Alumni Memorial Hall. The Princeton lacrosse team, advertised as the country's best this year, was coming to Johns Hopkins next day to try to end the University four-year record of having beaten every collegiate foe it met, and Hopkins — decidedly the underdog—was getting in the proper state of mind for them.

At game-time next afternoon, Homewood Field was jammed to the bulging point. The Hopkins team, buoyed by its win the week before over another favorite, Virginia, trotted onto the field between a cheering double line of rooters which stretched from gate to midfield. On the team were only two regulars from last year's squad, and young Fred Smith, the coach, was serving his first season in that position (he was a midfielder on the Hopkins team of 1950). But despite their dearth of veterans, they had proved in their first two games that they would be tough to beat, and they were out to win.

The scoring was a seesaw proposition; first one team would score, then the other would wipe out its lead with a goal of its own. The play was rugged; both tens were pushing themselves hard. At halftime, the score was tied, 8-8; at no time had either team been more than one point ahead.

But the vast reserves of Princeton began to have their effect in the second half; Hopkins was visibly tired. When Princeton scored two consecutive points, pulling two ahead of Hopkins, the home team's supporters knew that the lead was probably the winning one; two points, at that stage, were probably an insurmountable handicap.

When the final gun went off, the score was Princeton, 13; Hopkins, 11, and the University's four-championship streak seemed ended. But the Hopkins team, everyone agreed, had been magnificent, and owed apologies to nobody. The next week it began working on a new slate, and beat undefeated Army, 9–6.

Commencement

The 1951 commencement exercises of the Johns Hopkins University will be held on Tuesday, June 12 at 10 a.m. on the Homewood campus. The location will be outdoors on the Gilman Hall quadrangle, weather permitting; in case of rain, the exercises will be moved to the Homewood Gymnasium. Following the commencement ceremonies, a reception will be held for the graduates, their parents, friends, and alumni.

Fleas and Science

The fresh water flea has gone to work with science and industry. The tiny swimmers and their aquatic neighbors—caddisflies, larvae, mayflies, dragonflies, damselfly nymphs, certain snails, and small fresh water mussels—are dying by the thousands daily. They are the test subjects in research on stream pollution.

Dr. Charles E. Renn, head of a special sanitary engineering laboratory at Johns Hopkins, calls the minute animals the "guinea pigs" of his profession. Through tests on them he can determine how much waste material a factory can safely dump into a stream without causing a serious pollution problem.

It has been found that certain amounts of waste materials containing chromium, arsenic, and other toxic substances may be dumped into a stream without damage. However, larger amounts of waste may kill fish or the insects on which they feed, making the stream a dead, useless body of water. The problem is to find how much waste and what kinds of waste the stream can assimilate.

That is where Dr. Renn's nymphs and fleas come in: if they can take it, so can the stream.

Dr. Renn first uses a comparison test. If an industrialist wants to know how much chromium he can dump into a stream, Dr. Renn takes insects inhabiting that particular stream. He places them in a laboratory aquarium into which he pumps increasingly stronger amounts of a chromium solution.

"The first flea or nymph to turn up its heels gives us the danger signal," says Dr. Renn.

The second test, a long-term survival study, is more complicated. "It's easy enough to find out how much chromium

or other toxin will kill a water flea," Dr. Renn explains. "They simply keel over and we record the amount of toxin in the water at the time of death. It's a lot trickier to determine how they react to lesser amounts over a long period of time, and to prove that a certain amount will not harm them."

"We want to know if a flea can continue to lead a normal life in a 0.24 parts per million solution of chromium, for instance. Believe it or not, some insects actually take a new lease on life when introduced to a new toxic substance. Their rate of reproduction sometimes increases astonishingly."

Prevention of stream pollution has become a big and very expensive project. Industrial waste endangers streams in varied ways, sometimes through substances toxic in themselves, sometimes through the creation of slime which smothers insects and plants. Industry is tackling the problem in its own laboratories and is supporting university research such as that at Hopkins. Dr. Renn now heads a group investigating industrial waste disposal for the National Research Council.

As an example that pollution can be overcome, Dr. Renn points to a rayon company in the Shenandoah Valley which made an all-out drive to rid its waste products of certain metallic toxins. So successful was the project that Virginia was able to redevelop some seventy miles of stream into a fisherman's heaven.

Portrait Presentation

A portrait of Dr. Alan C. Woods, professor of ophthalmology at the Johns Hopkins School of Medicine and ophthalmologist-in-chief at the Hospital, has been presented to the University and Hospital by the Wilmer Residents Association. The presentation was made last month during the tenth clinical meeting of the association, which consists of all former senior residents of the Wilmer Ophthalmological Institute of the Hospital. The program included an address by Dr. George Scott, incoming professor of ophthalmology at the University of Edinburgh, Scotland, and papers reviewing the work of the Institute during the past year and the activities of former residents.

Dr. Tullos O. Coston, the first resident to train under Dr. Woods, presented the portrait to Dr. Lowell J. Reed, vice president of the University and Hospital. Speaking of the portrait (painted by Jacques Maroger) as a means of paying "tribute to one who means so much to all of us," Dr. Coston said: "Dr. Alan C. Woods' years of distinguished service and loyalty to the Johns Hopkins Hospital, Medical School, and University are well known and warrant the highest praise.

"Many are his valuable contributions to ophthalmological literature. These speak for themselves. Perhaps of greater importance has been his influence in the ophthalmological training of those of us who have been associated with him. Far beyond the confines of the Johns Hopkins his efforts extend. Since becoming Professor of Ophthalmology and Director of the Wilmer Institute in 1934, he has guided eighteen of us through the Residency. Of this group, three now hold professorships in other schools. Most all devote a part of their time to teaching in various sections of the country.

"Yes, while Dr. Woods' devotion to the proper training of younger men is unsurpassed, his loyalty to them is the trait many of us admire most of all. He has been ever willing to advise, assist, and counsel. Upon completion of training, one has the feeling of solidarity and confidence born of the knowledge that 'The Professor' believes in his ability. The feeling of mutual good will thus created serves as a powerful stimulus to bring us back year after year to our scientific 'home'.

"The Wilmer Residents Association conceived the idea of having Dr. Woods' portrait painted and together with the assistance of many of his friends brought it into being."

Jack Engeman

A PORTRAIT of Dr. Alan C. Woods, professor of ophthalmology at the School of Medicine and ophthalmologist-in-chief at the Hospital, has been presented to the University and Hospital by the Wilmer Residents Association. With the portrait, left to right, are Dr. Lowell J. Reed, vice president of the University and Hospital; Dr. Woods; Dr. Tullos O. Coston; and Dr. Fred M. Reese, president of the Association. (See story on this page)

O.R.O. Move Planned

The top-secret Operations Research Office, administered by Johns Hopkins for the Department of the Army, will soon move to Chevy Chase, Maryland. Located at present at Fort Lesley J. McNair in Washington, O.R.O. will transfer to the campus of the Chevy Chase Junior College, a girls' school that closed last year.

O.R.O. is the main Army agency for the study and solution of problems arising in the planning and conduct of operations. This covers virtually every

phase of the military, from home research to Korean combat. The problems include atomic, biological, chemical, and psychological warfare; submarines, guided missiles, defensive devices, and other "complex weapons"; battlefield command and the disposition of military personnel; the political reliability and military potential of our allies; and the strength and intentions of hostile nations.

Since 1948 when O.R.O. was established, almost no specific information about its activities has been released. In speaking of the move, director Ellis A. Johnson outlined in general terms certain projects now being carried on in Baltimore: one dealing with some aspects of the production and use of atomic weapons; a second "involving unusual forms of transportation"; and two research studies of Russian economy and manpower, under Drs. Evsey D. Domar and Clarence D. Long. *The Johns Hopkins Magazine* (May, 1950) reported on one phase of Dr. Domar's work, a study of the Soviet economist, Eugene S. Varga. These two projects are designed to provide an estimate of economic stresses within Russia.

Cancer Discovery

A way to diagnose cancer of the cervix at an early stage when it is almost entirely curable has been discovered by three Johns Hopkins doctors. This disease, which accounts for one-sixth of the cancer deaths in women, has previously been detectable only after the cancer cells invade normal tissue, when it is often too late to save the patient. Now an annual examination, revealing the cancerous cells before they do severe damage, may virtually eliminate the danger in cervix cancer.

The discovery was made by Richard TeLinde, professor of gynecology, with Gerald Galvin and Howard Jones, Jr., instructors in gynecology. They have found that microscopic examination reveals cancerous cells in a special form at the early stage, quite different from the normal cells surrounding it. At this stage the danger can be stopped by surgical removal of the uterus; but once the normal cells are damaged, surgery is impossible and the disease can be treated only by radium or X-ray.

The discovery, which has brought a new concept of cervix cancer, may affect the ideas about other forms of the disease. "What we formerly have looked upon as an 'early' form of cancer of the womb," one of the doctors commented, "now appears to be a very late form in the history of the development of this disease.... It appears that cancer of the cervix does not develop directly from a normal cell condition to an invading cancer but goes through an intermediate stage of cancer within the epithelium [the outer covering of cells]." It is possible that other forms of cancer progress in this same way, in which case the discovery will be of great importance to all cancer research.

Reactor Declassified

In order that maximum possible use can be made of the research capacities of Brookhaven National Laboratory, the Atomic Energy Commission has approved declassification of the west face of the recently completed nuclear reactor (atomic pile). Scientists wishing to use this section may do so subject to the approval of the Laboratory director and the AEC; the AEC "security clearance" (based on FBI investigations) will not be required.

Located on Long Island, Brookhaven is operated under contract with the AEC by a group of nine universities, of which Johns Hopkins is one, and it is devoted to long-range non-military research in atomic energy. The reactor, which began operation last August, is the nation's largest research reactor and is the only reactor in northeastern United States. Its primary purpose is to produce neutrons for scientific research; it was especially designed to accommodate a larger number of simultaneous experiments than is possible with any other known reactor.

Steel partitions thirty feet high have been erected to separate and screen the declassified reactor face from the remaining secret areas around the pile, and traffic from one section to the other will be allowed only through a closely guarded door. An unclassified portion of the adjacent pile laboratory, where special facilities and equipment make possible the study of dangerously radioactive samples, will also be made available to the researchers. The declassified area will at all times be under the surveillance of fully-cleared personnel who are aware of security requirements regarding the reactor.

Despite the fact that since the war much non-classified research has been done at universities and private laboratories, the extent to which some studies could be pursued has been limited by the equipment available. The declassification of one face of the Brookhaven reactor will make research with neutrons possible on projects initiated outside the AEC program which, nevertheless, relate to Brookhaven's overall research program.

Gratings to British

The University has announced that it will give to the British Government the design of the new machine for making diffraction gratings. Deemed the most important tool in physics research, the first fine diffraction grating was produced in 1880 by Henry A. Rowland, Hopkins' first professor of physics. Since that time the University has been the main source of supply for gratings.

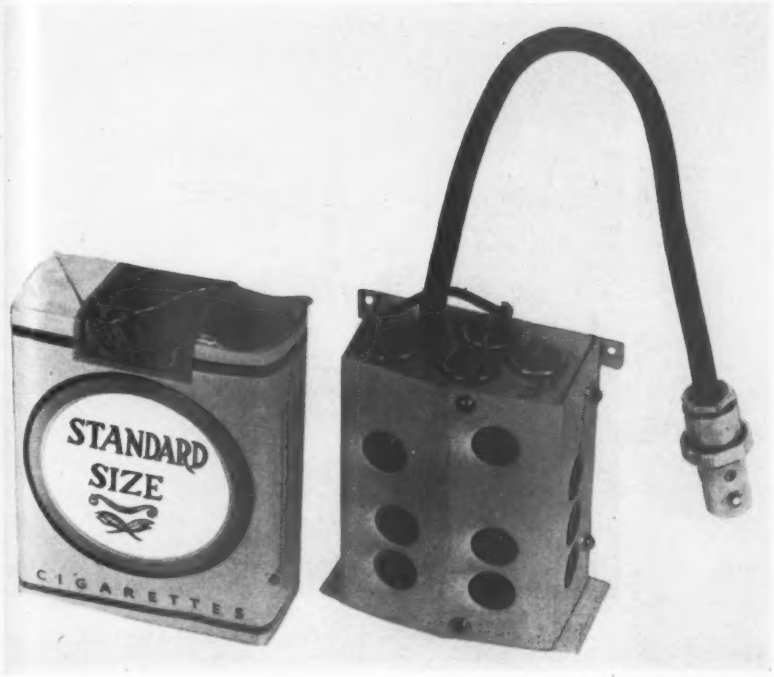
Last year John D. Strong, professor of physics, perfected a new machine for making gratings, and it is the design of this machine which will be given to the British. There have been many unsuccessful attempts to copy the machine, and up to this time Sweden has been the only European country with equipment for producing diffraction gratings.

Weather Forecasting

Five Hopkins meteorologists are conducting experiments by which they hope to improve the methods of weather forecasting. Headed by Dr. George S. Benton, assistant professor of civil engineering, the staff is making detailed investigations into the movement of water vapor in the atmosphere surrounding the North American continent.

The research is sponsored by the U. S. Air Force and has the very practical aim of making possible more accurate predictions of weather in battle areas. The Air Force is responsible for forecasting weather for ground troop movements, as well as for air operations. Accurate long-range predictions are vital in determining whether a given area will be dry enough to support heavy tanks, or whether flood conditions will prevent infantry and vehicles from crossing a stream.

Dr. Benton is also interested in exploding laymen's misconceptions about the weather. He points to the rainmaking projects now underway and the widespread fears that one area will "steal" rain from another. Dr. Benton regards rainmaking as a highly dubious process, both economically and scientifically. And he believes that even if effective it could hardly endanger the



Applied Physics Laboratory

A TINY RADIO TRANSMITTER has been developed by Hopkins' Applied Physics Laboratory for use in rocket research. Installed in a rocket's nose, the radio transmits flight data to the ground at distances up to one hundred miles. (See story on this page)

water supply of an area, because only a small percentage of the available water vapor actually falls as rain.

The meteorologists are concentrating their investigations on three main points: learning more of the movement and condensations of water vapor in the air, how these are related to the birth and development of storms, and how to devise better methods of forecasting precipitations and cloud cover.

To answer these questions they are tabulating the movement of water vapor over the North American continent, using records for each day during 1949. Charts prepared by the joint Weather Bureau-Air Force-Navy analysis center in Washington show the state of the atmosphere from ground level up to fifty thousand feet above sea level. Dr. Benton is being assisted in the project by George F. Collins, Richard S. Tankin, Kenneth J. Walsh, and Robert L. Carnahan.

Recent Lectures

The new Deiches lecture series was opened last month by Dr. Donald Young, director of the Russell Sage Foundation, who took as his general topic "Research and Practice in Social Sciences: with Particular Reference to Health, Welfare, and Government." The late William Deiches, Jr., left to the University a fund to be used for the cultivation of "human relations." It provides that an outstanding figure in this field be in residence at the University for one week each year. He is to make formal addresses and also hold frequent discussion meetings with faculty and student groups.

Dr. Edward Hallett Carr, teacher and historian, was the speaker at this year's Albert Shaw Lectures on Diplomatic History. Speaking under the auspices of the Page School of International Relations, Dr. Carr gave six lectures on "German-Soviet Relations Between the Two World Wars, 1919-1939."

Professor E. M. W. Tillyard, master of Jesus College, Cambridge, was the speaker at the Percy Turnbull Memorial Lectures held in April. In a series of five lectures Dr. Tillyard discussed "The Transition from the Medieval to the Renaissance Way of Thought in English Literature."

The William Sydney Thayer and Susan Read Thayer Lectureship in Clinical Medicine presented Dr. James Howard Means, of the Harvard Medical School. Dr. Means spoke on "The Thyroid Hormone" and "The Use of Hormones, Drugs, and Radiations in the Management of Thyroid Disorders."

New Radio Transmitter

A radio transmitter the size of a cigarette package (*see photograph on this page*) with ranges of twenty to one hundred miles, depending on its distance off the ground, has been developed at Hopkins' Applied Physics Laboratory. The transmitter was displayed at a recent convention of the Institute of Radio Engineers in New York.

The transmitter was developed at APL for use in telemetering. An important part of rocket research, telemetering has been termed the "lifeblood" of high altitude research. Through telemetering, scientists have the same advantage as if a skilled observer were in the ascending rocket, except that no human could possibly collect and send to the ground such an elaborate collection of data in the few short minutes of a rocket flight.

Scientists needed a compact transmitter for use in the restricted space in the nose of a rocket; but it had to be powerful enough to relay to the ground the story of the rocket's flight. The transmitter collects data from complicated telemetering pickups and relays it to ground recorders. Sixty separate sources of information can be tapped through telemetering during a flight test. The range of the transmitter extends from twenty miles at sea level to more than one hundred miles at ten thousand feet and above.

Television "Oscar"

The George Foster Peabody Award for the outstanding educational program during 1950 has been won by the Johns Hopkins Science Review, the University's weekly television series. Administered by the Henry W. Grady School of Journalism of the University of Georgia, the Peabody Awards are considered the top honor in radio and television; this year a total of fourteen awards were made in the two fields.

At ceremonies in New York Hopkins' Lynn Poole, creator and producer of the program, accepted the award in the name of the University, the DuMont network, and Baltimore station WAAM. The award citation read:

"Skillfully simplifying and visualizing the results of scientific research in varied

Friday, June 1, has been set as the date for the 1951 Turtle Derby at the Johns Hopkins Hospital. Before a throng of three thousand spectators, two to three hundred turtles and their trainers assemble annually on the Hospital tennis courts for the crawling of the sweepstakes classic. All state talent, the mounts are trucked in from the fields and farms of Maryland and diligently

fields, the 'Johns Hopkins Science Review' brings education to the layman in an interesting and attractive manner. It is convincing proof that learning can be fun.

"It demonstrates that teamwork among an educational institution, commercial station, and a network can make possible a wide dissemination of significant scholarship. As the pioneer university network series, it should stimulate a steady advance in the art of educational television."

Research Citations

Twelve Hopkins scientists and research specialists recently received citations recognizing unusual contributions to cancer research. The citations were awarded by the American Cancer Society for work on projects supported by the society. The awards were made to the following:

Sidney P. Colowick, associate professor of biology, and Nathan O. Kaplan, assistant professor of biology: for studies of the relationship of amino acids to the growth of normal and abnormal cells;

Jonas S. Friedenwald, associate professor of ophthalmology: for studies of X-ray effects on living tissue;

George O. Gey, assistant professor of surgery: for his work in photographing the characteristics and activity of cells by means of motion picture cameras attached to microscopes;

Perrin H. Long, professor of preventive medicine, and Emanuel B. Schoenbach, associate professor of preventive medicine: for investigations of possible therapeutic materials to treat cancer;

Manfred M. Mayer, associate professor of bacteriology: for examination of red blood cells directed toward the possible development of a way to immunize humans against cancer;

Curt P. Richter, associate professor of psychobiology: for his analyses of the relationship of tumors to skin phenomena;

William W. Scott, professor of urology: for studies on cancer in men;

John D. Strong, professor of physics: for development of an infra-red spectrograph to permit minute study of cell activity;

Lawson Wilkins, associate professor of pediatrics: for his analyses of the possibility of using steroid hormones to cure cancers in children and adolescents;

Louis B. Flexner, research associate in the department of embryology of the Carnegie Institution of Washington, located at the Hospital: for his study of normal growth in embryonic organs.

The American Cancer Society has also announced the organization of a special medical committee to operate under the joint sponsorship of the Society and the Medical and Chirurgical Faculty. The committee will study pelvic cancer, with emphasis on the doctor-patient relationship in the treatment of the disease. Similar plans carried out in Philadelphia and Boston have been termed very successful, particularly in making the public aware of the importance of early examination and treatment. Two members thus far have been named to the committee: Richard W. TeLinde, professor of gynecology, and J. Mason Hundley, Jr., M.D. '16, fac. '29–'38 (now chief of gynecology at the University of Maryland Hospital).

Medical History Group

The annual meeting of the American Association of the History of Medicine was held this year at the Johns Hopkins Institute of the History of Medicine, May 3 to 5. Planned as a part of the meeting was the Fielding H. Garrison Lecture, when I. E. Drabkin, associate professor of mathematics at the College of the City of New York, spoke on "Soranus and his System of Medicine."

Dr. Detlev W. Bronk delivered the address at the dinner meeting, May 4, in the Great Hall of the Welch Medical Library, at which Dr. Ralph H. Major,

Photographs by Jack Engeman

trained for the course by members of the medical departments. Despite advance ballyhoo for favored contestants, the race is distinguished by an unusually large number of dark turtles. Left to right: the Racing Commissioner and Medical Examiner check an entrant; contestants receive last-minute instructions from their trainers; the band marches; fans cheer.

president of the Association, presided. Dr. Richard H. Shryock, director of the Institute of the History of Medicine at Hopkins, was chairman of the program committee for the meeting.

Recent Books

WENDELL W. CRUZE, fac. '46–'48: *General Psychology for College Students.*

JOHN DEWEY, Ph.D. '84, LL.D. '15, fac. '06–'07, '32–'33: *Democrazia e Educazione.*

FREDERICK S. DUNN, Ph.D. '28: *War and the Minds of Men.*

HELEN MEREDITH GARTH, Ph.D. '49: *Saint Mary Magdalene in Medieval Literature.*

RICHARD H. K. GUGGENHEIMER, B.A. '26: *Creative Vision in Artist and Audience.*

ANNA GRANVILLE HATCHER, associate professor of Romance languages: *Modern English Word-Formation and Neo-Latin.*

ROCKWELL D. HUNT, Ph.D. '95: *A Vintage of Vignettes.*

COSMO G. MACKENZIE, B.A. '32, Sc.D. in Hyg. '36, fac. '37–'46: *Biological Antioxidants.*

H. DESMOND MARTIN, M.A. '50 (intro. by O. LATTIMORE, director of Page School, edited by E. Lattimore): *The Rise of Chingis Khan and His Conquest of North China.*

WILLIAM D. MCELROY and H. BENTLEY GLASS, associate professors of biology, editors: *Copper Metabolism: A Symposium on Animal, Plant and Soil Relationships.*

CLYDE F. REED, M.A. '40: *The Ferns of Maryland.*

DANIEL S. ROBINSON: *Royce's Logical Essays* (Josiah Royce, fel. '76–'78, Ph. D. '78).

FOLKE SKOOG, fac. '41–'45: *Plant Growth Substances.*

RICHARD H. SHRYOCK, director of the Institute of the History of Medicine (and M. Curti, T. C. Cochran, F. H. Harrington): *An American History.*

ERNEST A. STRATHMANN, B.A. '26, M.A. '28, Ph.D. '30: *Sir Walter Ralegh: A Study in Elizabethan Skepticism.*

WILLIAM TRELEASE, fac. '83–'84 (and T. G. Yuncker): *The Piperaceae of Northern South America,* Vols. I and II.

LIONELLO VENTURI, fac. '39–'40 (and R. Skira-Venturi): *Italian Painting.*

THOMAS WOODY, fac. '33–'35: *Liberal Education for Free Men.*

The Faculty

● *President Detlev W. Bronk* has been appointed by President Truman to a commission of prominent scientists which will advise the government in matters of top-secret research. Mr. Truman announced that he wanted the committee to provide "independent advice on scientific matters, especially as regards the objectives and interrelations of the several Federal agencies engaged in research of defense significance, including relevant foreign relations and intelligence matters." The group will work with Charles E. Wilson, defense mobilization director. Also included in the ten-man commission are Hugh Dryden, B.A. '16, M.A. '18, Ph.D. '19, and Robert F. Loeb, fac. '20–'21.

Dr. Bronk delivered the convocation address at the University of Chicago Convocation in March. His title was "The Scholar in an Age of Action." He spoke on "Oceanography and the Nation's Welfare" at the dedication of the Thomas Wayland Vaughan Laboratory of the Scripps Oceanographic Institution, La Jolla, Cal.

Dr. Bronk addressed a dinner meeting of the National Health Council in New York, discussing "Conservation of Human Resources." Dr. E. L. Stebbins, director of Hopkins' School of Hygiene and Public Health, is the president of the Council. Dr. Bronk was awarded an honorary degree of Doctor of Laws at the fiftieth anniversary celebration of the School of Pharmacy of Temple University, Philadelphia; he spoke to the group on "Re-

search—Pathway to a Better Life."

● *Among members of the Board of Trustees*, Howard Bruce has been named one of the members of a fund established by the Ford Foundation to develop methods and opportunities in adult education.

W. Frank Roberts, trustee of the University and president of the Board of Trustees of the Hospital, was recently honored at a special dinner held in New York by Lehigh University. "The L-in-Life Award," highest alumni honor, was conferred upon Mr. Roberts for his outstanding services to the public.

● *In the Faculty of Philosophy*, Robert L. Pendleton, professor of tropical soils and agriculture, has been awarded the David Livingstone Centenary Medal for 1950 of the American Geographical Society. Described as "one of the world's leading experts of soil survey and classification," Dr. Pendleton received the medal for his work in Africa and South America.

Sidney Painter, professor of history, spoke recently on "Armor and Medieval Man" at the Virginia Museum of Fine Arts in Richmond.

C. Vann Woodward, professor of American history, was this year's Walter Lynwood Fleming Lecturer in Southern history at Louisiana State University.

George Boas, professor of the history of philosophy, addressed the opening session of the National Education Association convention in Chicago last month. He was scheduled to speak at the annual meeting of the American Philosophical Society in Philadelphia.

J. Alvin Bearden, professor of physics, was awarded an honorary Doctor of Science degree by Furman University.

Stefan Einarsson, professor of Scandinavian philology, has gone to Iceland for the summer to continue his research on the history of Icelandic prose writers. He is to act as the official representative of the Johns Hopkins University at the fortieth anniversary celebration of the University of Iceland.

● *In the School of Business*, Edward R. Hawkins, dean, has been elected editor-in-chief of the *Journal of Marketing* of the American Marketing Association.

● *In the School of Medicine*, Alan M. Chesney, dean, is the sole nominee for the presidency of the Medical and Chirurgical Faculty next year.

Thomas B. Turner, lecturer in medicine and professor of bacteriology at the School of Hygiene, has been appointed assistant director for civil defense medical service in Baltimore. His six-man planning committee includes I. Ridgeway Trimble, associate professor of surgery and lecturer in anatomy. The civil defense health service director is Huntington Williams, lecturer in preventive medicine.

Janet B. Hardy, instructor in pediatrics, has been appointed director of the Bureau of Child Hygiene in the Baltimore Health Department.

Theodore Lidz, associate professor of psychiatry and assistant professor of medicine, has been appointed professor of psychiatry at Yale medical school, effective July 1.

Alfred Blalock, professor of surgery, is one of three foreign doctors to be honored by the University of Turin, Italy, during the International Exhibition of Medical Art, May 29–June 12. The university will award an honorary degree to Dr. Blalock for his works on surgical operations.

● *At the Hospital*, William B. Schaffrath has been appointed director of personnel relations, effective in May.

W. Arthur Purdum, chief pharmacist, was the principal speaker at a two-day seminar for hospital pharmacists conducted by the College of Pharmacy of the University of Texas and the Extension Division.

Helen E. Woods, chief of the medical social service department, directed a four-week symposium designed to orient and train present Army psychiatric social service workers to administer hospital-wide social service programs. The symposium opened last month at Brooke Army Medical Center, Fort Sam Houston, Texas.

Alumni Meetings

Lacrosse alumni will sponsor a dinner for the 1951 lacrosse team at Levering Hall on Tuesday, June 5 at 6 p.m. The committee includes Karl M. Levy, chairman; John C. Knipp, Sr.; Norman L. Robinson; Oliver D. Shepard, Jr.; James F. Adams; Douglas C. Turnbull, Jr.; Paul W. Bachman; W. Kelso Morrill; and Osmar P. Steinwald.

Pittsburgh alumni will hold a smoker and business meeting on Wednesday, June 6 (location to be announced). John M. Grove is president of the Pittsburgh association; William Crout is vice president; and Mrs. M. R. J. Wyllie is secretary-treasurer.

The Delmarva Alumni Association will hold a dinner on Friday, June 8 at the DuPont Country Club, Wilmington, Delaware. Dean Francis H. Horn of McCoy College will speak on the University's plans for the future. Dress will be informal; wives will be welcome. Herbert A. Lubs is chairman of the association; Judson G. Dimling, Henry V. P. Wilson, Jr., William D. Noble, J. D. Blackwell, and William W. Finney, II are vice chairmen; and Elinor D. Hartnell is secretary-treasurer. Reservations ($3.75 per person) should be addressed to Dr. Hartnell at 1001 West Twenty-Fifth Street, Wilmington.

The Johns Hopkins Medical and Surgical Association will hold a dinner on Wednesday, June 13 at Haddon Hall in Atlantic City, in conjunction with the meeting of the American Medical Association being held at that time. Assembly will be at 6 p.m. and dinner at seven. Wives are invited. Reservations ($5.50 per plate) may be made at the office of the Director of Alumni Relations, the Johns Hopkins University, Baltimore 18.

At an organizational meeting of Cleveland alumni on April 10, the following organizational-committee members were chosen: Parker C. Williams, chairman; Thomas M. Landy; and Charles A. Bowers.

The annual Arkansas Alumni Society meeting was held at the Hotel Sam Peck, Little Rock, on April 23. Fourteen attended; the senior members were J. I. Scarborough, 1908, J. H. Chesnutt, 1907; and H. L. Cecil, 1913.

The Alumni

Harry N. Holmes, Ph.D. '07, has been awarded the 1951 Gold Medal of the American Institute of Chemists.

C. Guyer Kelly, B.A. '08, Ph.D. '15, a Methodist missionary in North Africa, has been so successful at mixing religion and baseball that the Methodist Board of Missions has appointed him its "baseball missionary." Well known in both baseball and religious circles, Dr. Kelly believes that the game is useful because it "teaches good sportsmanship and give and take—two qualities badly needed in the world today."

Howard P. Doub, M.D. '17, was recently given the Gold Medal Award of the Radiological Society of North America. At the same meeting Dr. Doub was reelected librarian.

W. Stuart Symington, '18–'19, has been appointed administrator of the Reconstruction Finance Corporation, taking the place of the five-man board which ran the RFC before reorganization.

Reginald M. Atwater, M.P.H. '20, Dr.P.H. '21, has been elected to honorary fellowship in the Society of Medical Officers of Health of Great Britain.

Daniel C. Darrow, M.D. '20, has gone to Japan this month on the 1951 medical education mission of the Unitarian Service Committee. Dr. Darrow is a member of a team of physicians and scientists who will exchange medical information with Japanese medical faculty members.

Alfred R. Shands, fac. '25–'27, has been appointed chairman of the overseas committee of the Society of U. S. Medical Consultants in World War II. The society will assist in providing medical consultation to the Army Medical Service both in the United States and overseas.

William A. Feirer, Sc.D. in Hyg. '25, M.D. '30, fac. '24–'30, has been appointed to the new position of vice president in charge of scientific affairs for E. R. Squibb and Sons.

Allen W. Moger, g. '27–'28, has been promoted to professor of history at Washington and Lee University.

Dorothy Stimson, fel. '28–'29, has been awarded an honorary LL.D. from Goucher College, where a history lectureship has been inaugurated in her name.

Harold W. Stoke, Ph.D. '30, has been appointed director of a long-range study of public school teachers and their place in American society. The study is being conducted by the National Citizens Commission for the Public Schools. Dr. Stoke retired recently from the presidency of Louisiana State University.

Joseph F. Rooney, B.A. '30, M.D. '34, has been elected secretary-treasurer of the New York chapter of the International College of Surgeons.

Karl T. Compton, LL.D. (hon.) '37, has been awarded the 1950 Hoover Medal for "distinguished public service." The medal is given by the American Institute of Electrical Engineers, the American Society of Civil Engineers, the American Society of Mechanical Engineers, and the American Institute of Mining and Metallurgical Engineers.

W. T. Ziegler, Ph.D. '38, fac. '38–'44, has been elected chairman of the Georgia section of the American Chemical Society.

John D. Hamilton, fac. '39–'40, has been appointed professor and head of the department of pathology at the University of Toronto.

John Albert Kirchner, '33–'34, fac.

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'46–'49, has been appointed assistant professor of otolaryngology at the Yale School of Medicine.

Deaths

(*Dates are 1951, unless otherwise noted.*)

David Davis, M.D. '22, January 17.

Leonidas Chalmers Glenn, Ph.D. '99, (Geol.), January 11.

Henry Honeyman Hazen, B.A. '02, M.D. '06, fac. '12–'14, May 1.

George Helfrich, '25–'28 (Arts), April 22.

Matthew B. Hodge, fel. '25–'27 (Geol.), March 3.

Preston Gorman Lewis, Jr., '47–'51 (Arts), March 19.

William Frederick Marble, g. '50–'51, March 16.

Roy D. McClure, M.D. '08, fac. '12–'16, March 31.

William L. Miller, Jr., '49–'50 (McCoy Col.), April 13.

Karl Gustave Regnolds, g. '44–'46 (Pol. Econ.), August, 1949.

Robert L. Riddle, g. '25–'26 (Psychol.), April 22.

Marion Nelson Riggin (Mrs. Gordon E.), B.S. '41, April 2, 1949.

Wilbur H. Royster, g. '07–'08 (Greek), March 21, 1950.

Frederic T. Stearns, fac. '44–'45, February 17, 1949.

Harry Russell Stone, M.D. '04, March 25.

Robert Melvin Tarleton, B.A. '88, March 24.

Donald Charles Tulloch, M.P.H. '45, August 28, 1949.

William Barger Usilton, g. '92–'94 (Elec.), May 27, 1949.

Frank Conrad Vanderwall, g. '32–'33 (Zool.), August 18, 1944.

Charles I. Wendt, '91–'93 (Arts), March 5.

William A. Wetzel, Ph.D. '95 (Econ.), April 3.

Bailey Willis, fac. '95–'02, February 19, 1949.

Cunningham Wilson, g. '92–'93 (Pathol.), fac. '93–'94, '96–'97, '99, June 15, 1949.

Charles Paine Winsor, fac. '27–'29, '30–'33, '46–'51, April 4.

Robert James Young, '30–'31 (Eng.), July 27, 1949.

When Troubled People Meet

Continued from page 18

JOE: How about your job? Did anything aggravate you there?

MICKEY: No, nothing much.

DR. FRANK: Nothing *much?*

MICKEY (*hesitating again*): It's the fellow I work with. He doesn't like me. I haven't done anything to him, but he knows I'm smarter than he is and he's afraid I'm after his job. I don't want his job, believe me. All I want is to get rid of this stomach trouble.

JOE: What about that fellow?

MICKEY: He went to the boss and told him that I wasn't doing my job right and that he wouldn't work with me in the same room. The boss knew that he was wrong, but he transferred me to another department anyway. It sure griped me. I thought of quitting . . . but it's a good job and I like it there. I've always liked the boss; I can't understand why he did that to me. When I got home that night I was shaking all over. I couldn't eat or sleep. I kept thinking all night how mean people are. I always try to do a good job, and what do you get? My stomach's been terrible all week.

EDITH: Why do you think you got so upset?

MICKEY: Isn't that *enough* to give anybody a fit?

DR. FRANK: I wonder if you ever had anything like that happen to you before?

MICKEY: Come to think of it . . . my brother Bill never did anything for my father. *I* was always the good boy. I mowed the lawn and ran the errands while he was out having a good time. He was jealous of me because I got the good grades in school. He picked a lot of fights, but my father always blamed me—even though he was sure that Bill had started the trouble. It sure griped me. I felt like telling my father off . . . but I was scared of him.

JOE: Did you get stomach aches then?

MICKEY: I sure did. Even now when I think of it I get all shaky and nervous inside . . . (*He pauses.*) Say, you know, that's just the way it feels when I get mad at the boss. . . . Maybe that's *it!* It looks like I get these stomach aches whenever I get mad at somebody and can't do anything about it. I feel a lot better, getting that off my chest.

Robert M. Mottar

GROUP THERAPY DEMONSTRATIONS were originally given by Dr. Frank and his associates on a telecast last month by the Johns Hopkins Science Review. Phipps Clinic research workers (*above, at rehearsal*) took the parts of patients, and they posed for the photographs used to illustrate this article. Although the demonstrations are based on actual cases, facts and dialogues have been disguised in such a way that the identity of no actual patient is revealed. Also, for the purposes of showing the principles and procedures of group therapy, "climaxes"—the points at which patients begin to solve their problems—occur in the demonstration dialogues much more quickly, in some instances, than would actually be the case. In an actual group, it may take many weeks for a patient to progress to the point where he begins finally to see the answer to his emotional upset. The research reported in this article is sponsored by the Veterans Administration. The statements and conclusions published by the authors are the result of their own studies and do not necessarily reflect the opinion or policy of the V. A. The Johns Hopkins Science Review is produced by Lynn Poole, of the University, and directed by Anthony Farrar, of Station WAAM.

The Irrepressible Dr. Wood

Continued from page 7

red light. His portraits of humans proved more useful from the scientific point of view; they showed the pores in the skin and the system of tiny blood-vessels beneath the skin, and they pointed the way to general use by medical diagnosticians.

Working with ultra-violet light, Wood found that it could be used to detect forged documents. His process, known as the Vienna method (after the first police department to use his technique), is now a standard criminology device. During World War I, Wood was trying to put across the method to the British Secret Service, but the British were too entranced with a new "spy-proof" paper to have any interest in further inventions. Extremely popular because letters written on it were not held up for secret-writing tests, the paper was printed with an overlay of three inks: one was soluble in water, one in alcohol, and one in benzine. On top of this they were slightly soft, so that they would smear if written upon with a glass rod.

Wood was convinced he could beat it. After several unsuccessful attempts, he took a rubber stamp, coated it with a thin film of Vaseline, and pressed it on the paper. He then gave the paper to the censors; they tried their customary tests, inspected it closely, and decided "Nothing there." Wood took the paper to his ultra-violet light and allowed all to read, in clear block letters, "NO SECRET WRITING HERE."

IN those early years at Hopkins Wood also developed, with Pickering of Harvard, the now-standard method of judging the velocity of stars by comparative spectrum photographs. But he did not allow his scientific work to make too great inroads on his gayer life. For the *Saturday Evening Post* and *Cosmopolitan*, he collaborated with Arthur Train on two pseudo-scientific fiction stories about people who flew to the moon in (yes!) flying saucers.

He built a fish-eye camera, the lens immersed in water, in order to study the diffraction effects on landscape as seen by a fish. And he achieved international notoriety with his mercury telescope. This was a dish of mercury, rotated so that it formed a paraboloidal mirror, at the bottom of a well; the observer looking down from the top of the well could see the stars brilliantly reflected.

Amateur scientists were entranced with the idea that the mirror could be enlarged indefinitely to perform many miraculous feats. A group of Texans pledged thousands of dollars for the construction of a stupendous one, covering an acre of desert, with which to signal Mars.

Wood's biographer, William Seabrook, points out the telescope's considerable disadvantage—that you cannot point a hole in the ground at the object you want to study. The telescope did prove to have one use, however: the extremely delicate mechanism for rotating the mercury dish was adapted successfully to the sensitive machine which rules diffraction gratings.

WITH the coming of World War I, Wood had acted as technical adviser to the War Department; in 1917 he was commissioned a major in the Signal Corps. Apparently most of his suggestions were too advanced, for, although few were used in 1918, they appeared as "secret weapons"—on both sides—in World War II. His idea for destroying zeppelins came into being as the "stick of bombs." The Nazis announced a secret weapon which proved to be Wood's "spaghetti shell," unreeling coils of wire to snarl plane propellers. His suggestion for warships' defense was used only sparingly, but by World War II blisters were a standard construction device.

NEXT MONTH
"Lacrosse Co-Captain"
A picture article in the Johns Hopkins Magazine for June

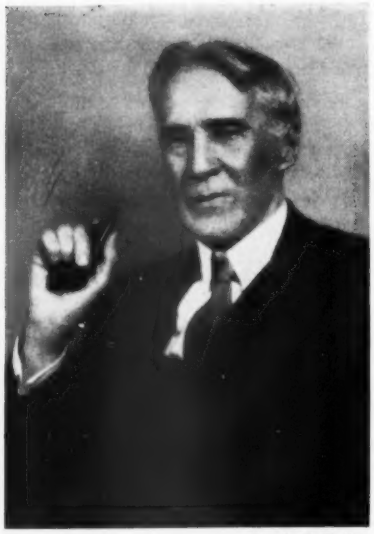
Tear gas did prove practical for trench warfare and, since it did not violate the Hague convention, it was used by the Allies on a small scale. Wood developed an ultra-violet lamp, now called "black light," as a signalling device. This was employed very little until after the war, when French agriculturalists discovered its possibilities for detecting diseased silk worms, leading to wide biological and medical use.

Wood himself assisted on several war research projects, of which the most rewarding was his work with Paul Langevin, pioneer in supersonics. Five years after the war Wood interested Alfred Loomis in the subject. Loomis, a multi-millionaire to whom scientific research was a hobby, bought and installed at his Tuxedo Park home a first-class supersonics laboratory, far beyond the hand-me-down equipment normally available on a university budget. The illuminating investigations which followed, conducted jointly by Wood and Loomis, were the starting point for supersonics research in physics, biology, and medicine.

BY this time Wood was decidedly an international figure. His scientific prowess was well established by his extraordinary work in physical optics and spectroscopy. His studies of the absorption of sodium and iodine vapors and his papers on the phenomenon of resonance radiation (which he had discovered) formed a basic part of atomic and molecular theories. His massive book, *Physical Optics*, was (and still remains) a standard text.

Unlike most scientists, Wood was also a figure in international society. He moved easily, and noisily, from St. Moritz to English country houses to Long Island. His "jabberwocky" recitals, a dialect all his own, brightened elaborate balls as well as scientific conventions. His skill at costuming was established when he won first prize at a fancy-dress ball as Pegoud, the French aviator, flying upside down; the costume included five-foot wings which collapsed to fold around a dancing partner. (Fifteen years earlier Wood and a friend had attended a costume ball as Will-Be and Always Wright.)

One of his accomplishments which added considerable excitement was the art of boomerang-throwing. He learned it in order, he claims, to study aerodynamics principles. Before Hopkins reformed its sports program, when it was still interested in gate receipts, Wood was invited to perform with his boomerang between halves at football games. The popularity of Wood's antics definitely raised the size of the paying audience and may also have had something to do with a rash of broken windows in Baltimore, rumored to be caused by little boys' trying to ape his tricks. Wood's favorite stunt, indicative of his skilled control, was to skim a heavy weapon over the stands so that it just cleared the heads of spectators. This trick came to an abrupt end one day when a man with an umbrella got excited and stood up in the back row; the speeding boomerang removed the um-



Harris & Ewing

DR. R. W. WOOD has been for many years one of the great men of physics.

brella and very nearly decapitated the man.

ANOTHER of Wood's favorite avocations, that of detective, started in 1920 with the Wall Street Bomb Case. One busy morning on Wall Street a horse-drawn cart, carrying a barrel, stopped in front of the Morgan bank. Ten minutes later the barrel blew up; it killed thirty-nine people, injured hundreds more, and left as grisly evidence only bits of the cart and the two hind legs of the unfortunate horse. When the police were unable to find any clues, Wood was asked to examine the debris. Wood found several odd bits of metal which had been overlooked. From them he was able to guess at the construction of the bomb and certain clues as to its source.

Although the police never were able to run down the criminal, Wood's successful handling of his part of the case established him as an expert in criminology. He acted as consultant on many crimes involving bombs and explosions. He solved Maryland's Candy-Box Murder, explained the mysterious death of Emily Briscoe, and joined the FBI faculty as lecturer on the means of violent death.

He was consultant on quite a good many other subjects, for he was never shy about giving opinions to reporters and made excellent copy on almost any subject. "Can baseballs actually curve?" Wood obliged with an experiment to show that spinners do. "Could Dr. Wood think of a new way to scare a theater audience?" For Gilbert Miller, Wood produced a subaudible tone, played on an extra-long organpipe, which so nearly caused a panic that it was abandoned after the first performance.

At the well-fitted Tuxedo Park laboratory he enlarged knowledge about the newly-discovered Raman effect. Wood's special diffraction gratings (climaxed in an eighteen-inch replica grating for Mt. Palomar) revolutionized the techniques of astrophysical research. He is also credited with more familiar discoveries, such as a method of frosting the glass of electric light bulbs to modify glare.

BESIDES his versatility, Wood is especially known for his experimental techniques. He is a direct and determined man who takes the quickest means to achieve his end. Most scientists spend weeks blueprinting a setup which then may or may not work. But when Wood gets an idea, he immediately sets up the equipment, using tin cans, old chalk boxes, bicycle wheels, and anything else which happens to be lying around his laboratory. (He has alienated some colleagues by his casual "borrowing" of equipment which happened to be lying around *their* laboratories.) Not only has he saved a great deal of money and time; his bizarre equipment has often been developed into extremely effective laboratory tools.

By the time Robert Wood retired to research professor in 1938, he had collected enough medals and citations to fill a sizable drawer. One that he particularly liked was the honorary Ph.D. awarded by the University of Berlin in 1931; he had taken no degree beyond the B.A. from Harvard in 1891. Yet his awards include the Ives medal, the Draper medal, and two Rumford medals, and he is a member of more than a dozen honorary societies, including the National Academy of Sciences, the Royal Society in London, the Accademia dei Lincei in Rome, and the Royal Swedish Academy.

During World War II Wood was a consultant on the Manhattan project, and he worked on bazooka shells and similar projectiles at Aberdeen Proving Ground. He was also one of the favorite public authorities, as reporters asked his opinions on air raid sirens, blackout lights, and the secret weapon used by the Nazis at Fort Eben Emael.

BY the calendar, Wood is now past eighty, but age has brought few if any changes in him. He comes in to his laboratory in Rowland Hall almost every day. Still dextrous, he works alternately on grating problems and on trick techniques. Often he is to be found conferring with younger men or answering the questions of students. And he is not overlooking the production—and probable royalties—on the newest edition of *How to Tell the Birds from the Flowers*. It comes out soon, will be published (advt.) by Dodd, Mead, and may be ordered at your nearest bookstore.

Robert M. Mottar

ROBERT WOOD'S DESK is a jumbled heap of letters, tools, lenses, and journals. Only in the summer months—when he is away—can the desk be kept even reasonably clear.

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